

REMARKS

Applicants' thank the Examiner for clarifying the distinction between hydrofluoric acid (i.e., aqueous solution of hydrogen fluoride) and hydrogen fluoride (i.e., an anhydrous gas). Thus, claim 1 has been amended to clarify the solution balance of water as the Examiner properly interprets the claims. No new matter has been added and no additional searching is required since the Examiner has already considered the balance of water as being in the claims, e.g., also in view of the calculations of the standard commercial solution of HF (49% HF in H₂O by weight) he previously made of record.

Rejection Under 35 U.S.C. '102(b) and 103

The rejections under Ohnishi are respectfully traversed.

At page 2, last line, of the Office Action the Examiner the states "...similar results are obtained from Ohnishi's and applicant's compositions, is would appear that Ohnishi's composition is comparable to the claims composition." This is not correct. See Figure 3 and col. 5, lines 4-9 of Ohnishi. The etching results for HF and HSO₃F are not the same. They do not etch in the same manner. Ohnishi does not teach the amount of HF that is produced in solution and as the Examiner correctly notes, the amount of HF generated cannot be determined. Furthermore, as can be seen in Fig. 3 of Ohnishi, if the HF+H₂SO₄ were in equilibrium with HSO₃F +H₂O the curves would be identical or at least parallel (due to differences in concentrations). As clearly depicted, this is not the case. Equilibrium is not reached and thus, there is a difference between starting with HF and starting with HSO₃F. One skilled in the art could not conclude that a sufficiently high HF concentration could be reached when starting from HSO₃F.

As the Examiner notes, Ohnishi does not explicitly teach the amount of HF that is produced in solution. The Examiner *believes* that the weight ratio between sulfuric acid and HF would be inherently present. But it is not enough for the PTO to "believe", more than speculation or belief must support the rejection. The Examiner cites *In re Best* to require the Applicant to prove that the subject matter shown to be in the prior art does not possess the characteristic relied upon. But *In re Best* requires that the PTO show it is reasonable to believe that the characteristics is possessed in the prior art, for the burden to shift to the applicant. In this case, however, the teachings of Ohnishi are so ambiguous that Applicants', like a skilled worker, would not be able to determine a reference solution with which to compare or from which to assume such possession. If one cannot determine the solution being taught, one cannot determine or presume the characteristics of that solution.

For example, the Examiner makes reference to Ohnishi's comparative example wherein a 1% hydrofluoric acid is added to a liquid mixture of H_2SO_4 and H_2O_2 in a 5:1 ratio (see Col 7, lines 37+). The Examiner concludes that this corresponds to an H_2SO_4 :HF (w/w) ratio of 300:1. This conclusion is unjustified. In order to determine if the comparative example satisfies the ratio of a:b in the claims, one would first have to know if the reference is teaching 1% of a standard 49% HF solution, a 1% HF solution or a 1% concentration of HF in the final solution? No weight, volume or mole amounts are provided. Furthermore, the Examiner contends that a skilled artisan would expect the ratios taught in Ohnishi to reflect a volume/volume relationship because it is customary when all components are liquid. This is speculation. Applicant's note that skilled artisans often refer to ratios of solution components by volume, weight or by moles. For example, US 4,921,572, teaches amounts/ratios of each etching solution component in grams and moles. Thus, Ohnishi is also ambiguous with regards to weight, volume or mole percentage ratios.

The Ohnishi reference is unclear and would not lead one skilled in the art to arrive at the present invention. Nor does the reference provide a clear teaching of a solution against which applicants could compare their claimed invention, if that had been necessary.

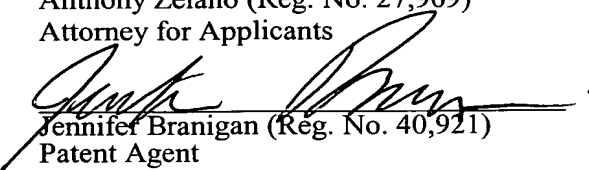
Thus, the reference fails to teach or suggest a process for removing sidewall residue after dry etching with a solution consisting essentially of sulfuric acid, fluorine containing compound, which is hydrogen fluoride, ammonium fluoride or an alkali metal fluoride, hydrogen peroxide and water, where the weight ratio of sulfuric acid to the fluorine-containing compound is 10:1 to 700:1. Additionally, the inherent properties of the solutions of Ohnishi cannot be determined based on the anemic teachings of Ohnishi with regards to the amounts of each component in the solution composition.

The claims of the application are submitted to be in condition for allowance. However, should the examiner have any questions or comments, he is cordially invited to telephone the undersigned at the number below.

The Commissioner is hereby authorized to charge any fees associated with this response or credit any overpayment to Deposit Account No. 13-3402.

Respectfully submitted,

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